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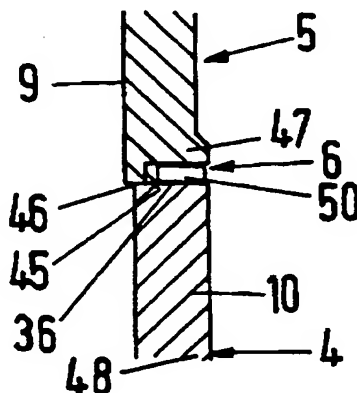
(54) Abstract Title

Sealing of motor terminal box

(57) A motor terminal box is made in two parts 4 and 5. The two parts hold a frame-like seal 6 between them, to protect against contamination and the like. However, the two parts also abut each other, with protrusion 46 touching surface 36, to create an electrical connection between them - this provides shielding.

Each part of the terminal box holds a connector (64, Fig 2 and 67, Fig 3). The terminal box may be sealed to the motor housing (2, Fig 1) in the same manner.

Fig. 5



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Fig. 1

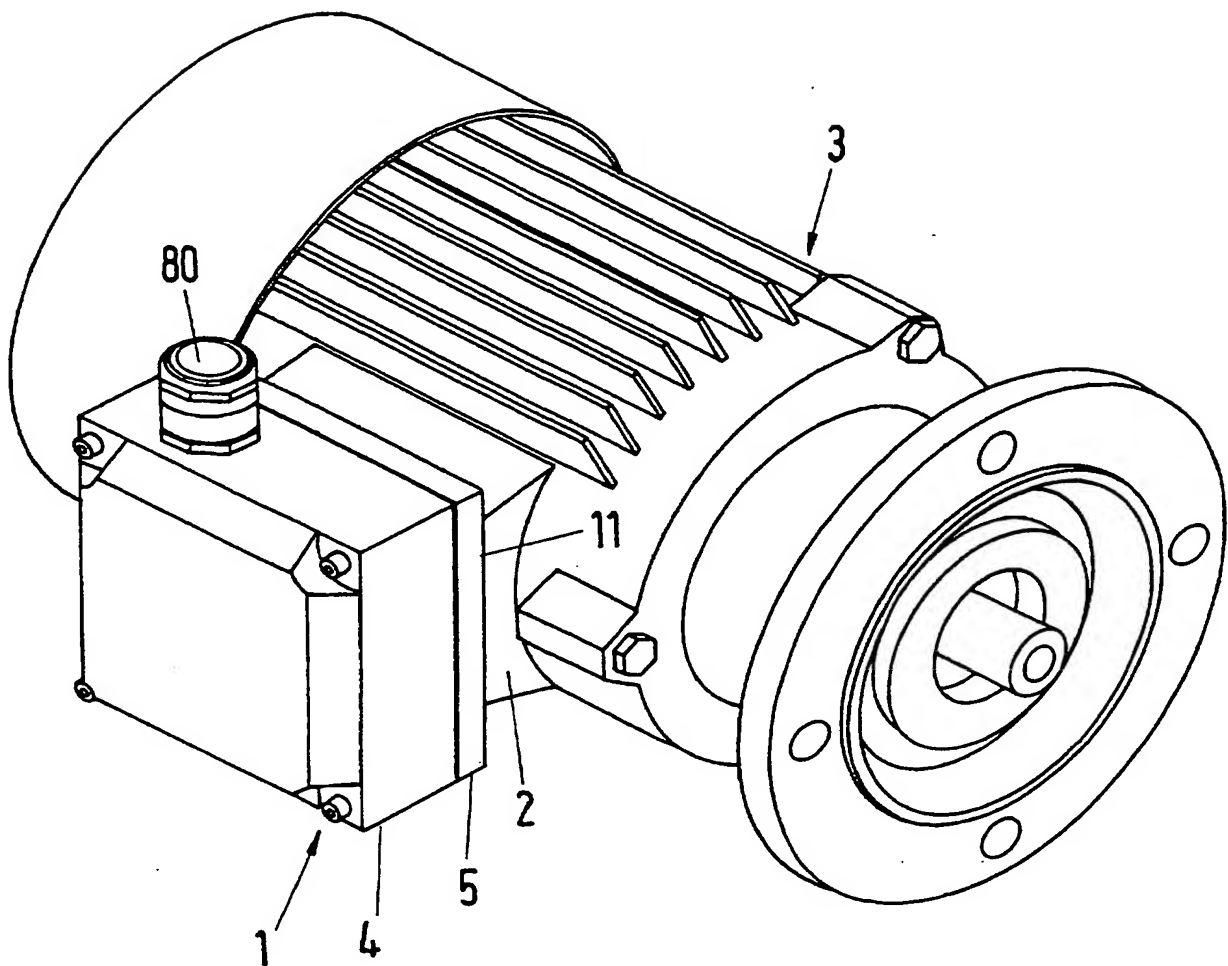


Fig. 2

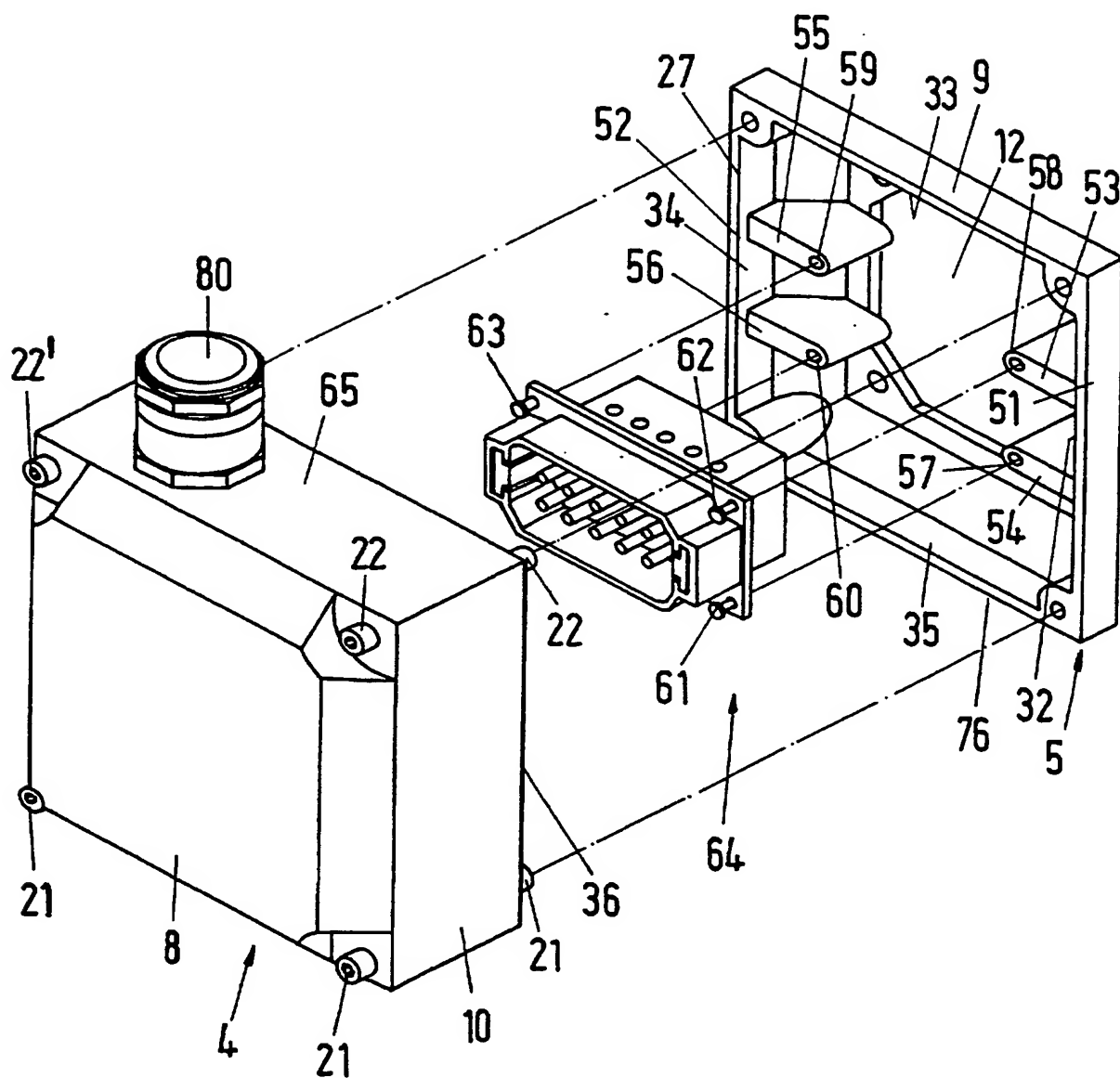


Fig. 3

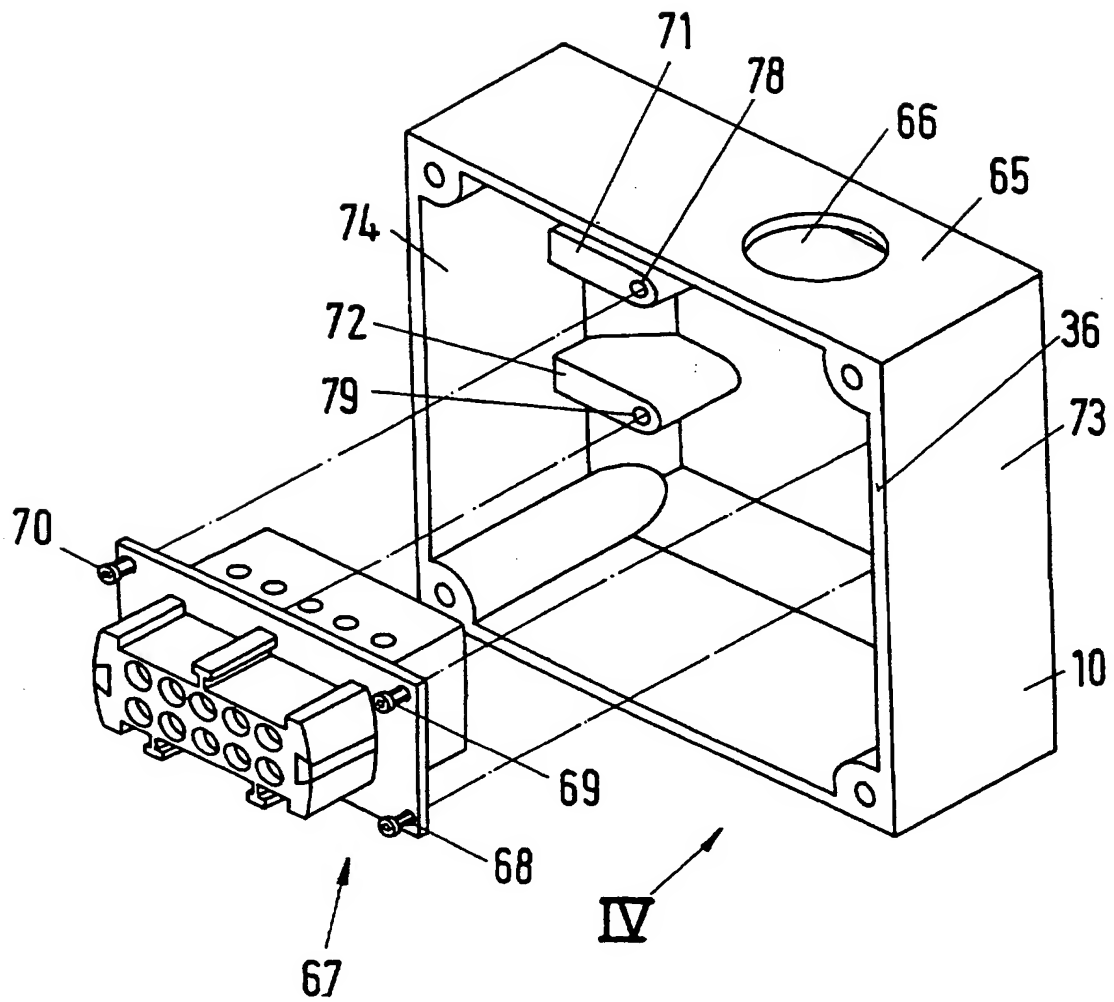


Fig. 4^{4/4}

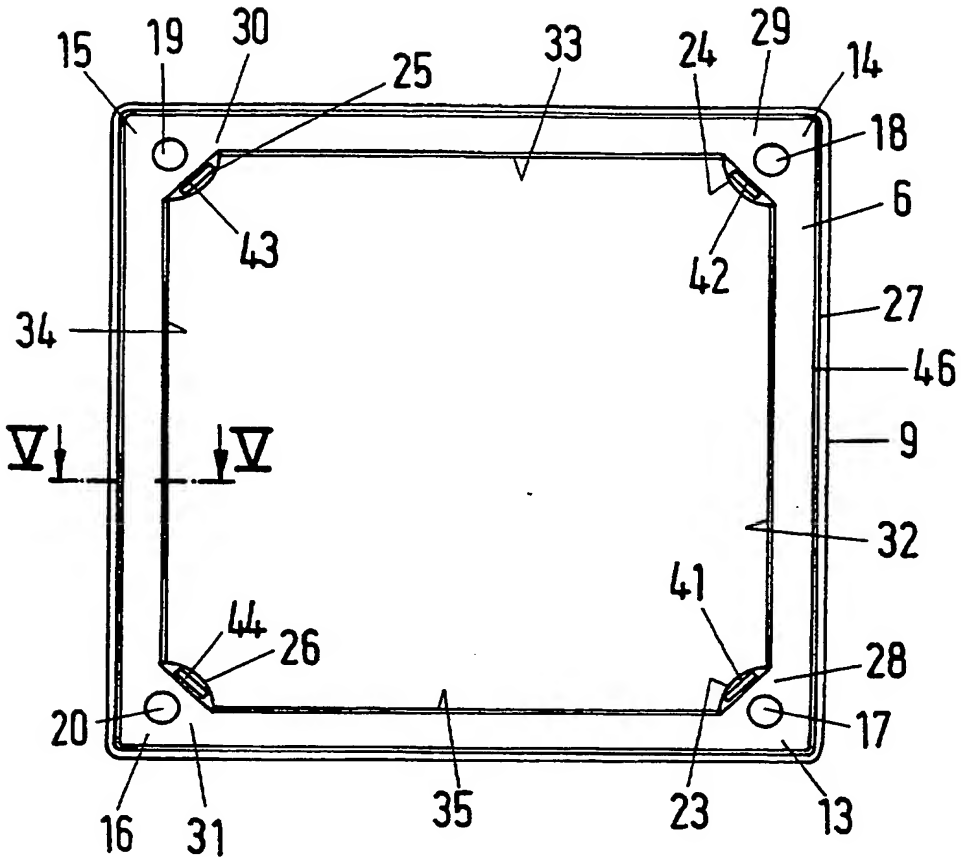
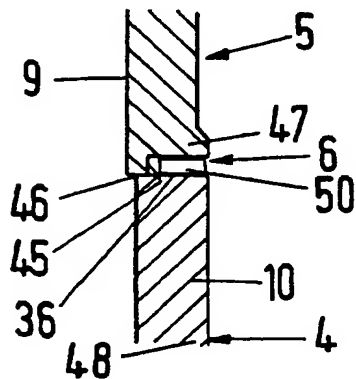


Fig. 5



2340673**Motor Terminal Box**

The invention relates to a motor terminal box having a first terminal-box part and a second terminal-box part connected together with the interposition of a frame-like seal, each terminal-box part having a plug-in connexion part of a plug-in connexion. The terminal-box parts abut each other in a planar manner with a metallic contact face and a metallic counter-contact face.

In a known motor terminal box of this type the motor terminal box comprises two parts which are connected to one respective part of a plug-in connexion. The two parts of the plug-in connexion are components specific to the manufacturer, which are complicated and expensive to produce. The bowl-shaped terminal-box parts have to be adapted accordingly for receiving the parts of the plug-in connexion. A shielded motor cable passes into the terminal box. In order to obtain a satisfactory shielding effect, a metal-metal contact is provided between the two terminal-box parts by means of screws with which the terminal-box parts are screwed together. The metallic connexion by means of the screws can be adversely affected or even broken, for example by contamination, oxidation or by layers of paint or the like applied to the motor terminal box from the outside.

An object of the invention is to design a motor terminal box of this type in such a way as to ensure that the required shielding effect is achieved without difficulty at the same time as achieving a structurally simple design.

The invention provides a motor terminal box as claimed in Claim 1.

In accordance with the invention the existing metallic contact and counter-contact faces, by which the parts of the terminal box abut each other, ensure a trouble-free metal-metal abutment between the parts of the terminal box even under unfavourable

conditions such as oxidation, contamination and the like. In this way, a reduction in the shielding effect will be prevented.

The invention is described below with reference to an embodiment illustrated in the drawings, in which

- Fig. 1 is a perspective view of a motor terminal box according to the invention which is secured to a motor;
- Fig. 2 is a perspective, exploded view of the motor terminal box according to Fig. 1 with a base part and a cover part as well as a plug part connected thereto;
- Fig. 3 is a perspective, exploded view of the base part of the motor terminal box according to Fig. 2 with the plug part;
- Fig. 4 is a view in the direction of the arrow IV in Fig. 3 with a seal arranged on a front face of the cover part, and
- Fig. 5 is a section along the line V-V in Fig. 4.

The motor terminal box 1 illustrated in Figs. 1 to 5 is preferably screwed to a lateral flange 2 of a motor 3. The motor terminal box 1 comprises a pan-shaped base part 4 and a cover part 5, which are screwed together with the interposition of a frame seal 6 (Figs. 4, 5). The base part 4 and the cover part 5 have a rectangular, preferably a square, outline with rear walls 7 and 8 respectively as well as a continuous casing 10 and a continuous edge 9 respectively.

The terminal box 1 is screwed by the cover part 5 to the flange 2 of the motor 3. In this case the cover part 5 rests with the rear wall 7 thereof or the edge 9 thereof respectively on an edge 11 (Fig. 1) of the motor flange 2 with the interposition of a seal (not shown) in a sealed manner. The seal is preferably constructed in the form of a frame seal in accordance with the seal 6 of the terminal box 1. The rear wall 7 of the cover part 5 is provided with a through opening 12 for passing through cables of the motor 3 and the like.

The edge 9 of the cover part 5 has a relatively narrow width. The cover part 5 rests with the front face 27 of its edge 9 against a counter face of the base part 4, which is formed by the front face 36 of the casing 10 of the base part 4. Enlarged portions 23 to 26, which project inwards beyond the flat inner sides 32 to 35 of the cover part 5 arranged at right angles to one another and which have an arcuate – and preferably a quadrant-shaped – outline as seen in the view according to Fig. 4, are provided in the corner areas 13 to 16 (Fig. 4) of the edge 9 of the said cover part 5. Threaded bores 17 to 20 for screws 21, 22, by which the base part 4 and the cover part 5 are screwed together, are provided in the enlarged portions 23 to 26. The cover part 5 is itself screwed to the motor flange 2 by means of further screws (not shown).

As shown in Figs. 4 and 5, the frame seal 6 rests on the front face 27 of the edge 9 of the cover part in a planar manner. The seal 6 has the same contour as the frame 9, but it is slightly narrower and is bevelled in the enlarged corner areas 28 to 31 thereof in such a way that the enlarged portions 23 to 26 of the edge 9 project inwards beyond the enlarged portions 28 to 31 on the side towards the seal (Fig. 5).

Attachments 41 to 44 (Fig. 4), which project in the direction towards the base part 4 and with which the cover part 5 rests against the front face 36 of the casing 10 of the base part 4 when the terminal box 1 is assembled, are provided on the areas of the rounded enlarged portions 23 to 26 of the cover edge 9 projecting inwards beyond the frame seal 6. Since the base part 4 and the cover part 5 consist of metal, the abutment of the attachments 41 to 44 against the front face 36 of the base part 4 ensures the metallic contact required for the conductive connexion in a reliable manner.

When the cover part 5 is not assembled, the length of the attachments 41 to 44 is slightly less than the thickness of the seal 6, so that the said seal 6 projects slightly beyond the attachments. In this way, during the assembly of the motor terminal box 1, the seal 6 is compressed resiliently, until the attachments 41 to 44 come to rest against the front face 36 of the base part 4. In this way, the necessary sealed connexion of the

base part 4 and the cover part 5 is achieved.

The seal 6 is provided with insertion openings for the screws 21, 21', 22, 22' which are in alignment with the threaded bores 17 to 20 of the cover part 5.

The front face 11 of the flange 2 of the motor 3 is advantageously constructed in the same way as the front face of the edge 9 of the cover part 5. Metallic contact likewise occurs when the cover part 5 is assembled on the flange 2, since the flange 2 (not shown) is provided with projections or attachments which come to rest against the rear wall 7 of the cover part 5 when the said cover part 5 is assembled.

As further shown in Figs. 4 and 5, the seal 6 is arranged in a continuous shoulder 45 of the edge 9 of the cover part 5. The shoulder 45 is open towards the inside, whereas it is bounded and covered towards the outside by a continuous web 46 projecting beyond the front face 27. The web 46 rests on the front face 36 of the casing 10 of the base part 4 over substantially half its width, thus likewise ensuring metallic contact. The other part of the web 46 projects beyond the casing 10. The web 46 protects the seal 6 towards the outside from dirt and damage.

In addition, the edge 9 of the cover part 5 is enlarged on the inside in the manner of a bead (enlarged portion 47) in the region of the shoulder 45.

As shown in Fig. 5, an inner edge 50 of the seal 6 is slightly offset towards the outside with respect to the enlarged portion 47 and an inner side 48 of the casing 10 of the base part 4. The seal 6 is thus protected on the inside from damage by parts or cables or the like situated in the motor terminal box 1 and which are passed through the motor terminal box.

As further shown in Fig. 2, two mutually parallel webs 53 to 56 project in each case beyond two mutually opposed portions 51 and 52 of the edge 9. They are preferably constructed in the same manner. The lower webs 54 and 56 in Fig. 2 as well as

the upper webs 53 and 55 are preferably situated at the same height. The mutually facing inner edges thereof are preferably rounded in an arcuate manner in order to prevent damage to the cables during insertion through the opening 12 in the rear wall 7. In the webs 53 to 56 a threaded bore 57 to 60, into which screws 61 to 63 for fastening a plug part 64 provided in the motor terminal box 1 are screwed, are provided respectively in the region of the rounded edges.

A socket 67, which is secured in the base part 4, is associated with the plug part 64 (Fig. 3).

The base part 4 is constructed in the shape of a bowl. The casing 10 thereof is higher than the edge 9 of the cover part 5 by a multiple. A through opening 66 (Fig. 3) for a screwed cable connexion 80, through which cables (not shown) arriving from the outside are passed, is provided in a wall portion 65 at the top in Fig. 2. The said cables are connected to the socket part 67. The said socket part is screwed to webs 71 and 72 of the base part 4 by screws 68 to 70. The webs 71, 72 are preferably designed in the same way as the webs 53 to 56 of the cover part 5. They likewise project at right angles beyond mutually opposed wall portions 73 and 74 as well as the rear wall 8. Only the webs 71, 72 projecting at right angles from the wall portion 74 are visible in Fig. 3. Two respective mutually opposed webs are situated at the same level. Like the webs 53 to 56, the webs 71, 72 have edges rounded in an arcuate manner, in the region of which threaded bores 78, 79 for the screws 68 to 70 are again provided. Apart from the socket part 67, further electrical and/or electronic components, such as for example a brake rectifier or the like, can be fitted and also pre-assembled in the base part 4.

By means of the embodiment described, the motor terminal box 1 can be readily pre-assembled on the flange 2 of the motor 3. For this purpose its cover part 5 together with the pre-assembled plug part 64 is secured to the flange 2 in the manner described. The base part 4 with the pre-assembled socket part 67 thereof can then be mounted on the cover part 5 and secured thereto, in order to produce the necessary conductive connexion. When the base part 4 is mounted on the cover part 5, the plug-in connexion

between the plug part 64 and the socket part 67 takes place in a forcible manner. The cable passing through the screwed cable connexion 80 into the base part 4 can be connected to the socket part 67. The base part 4 is screwed to the cover part 5 by the screws 21, 22 and 21', 22'. The screwed cable connexion 80 of the base part 4 ensures that shielded cables fully retain the shielding effect. For this purpose the braiding of the respective cable is pushed onto the metallic tube member present in screwed cable connexions, so as to ensure a metallic connexion over a large area. The metallic tube member projects into a cone of rubber in a known manner and, when the parts of the screwed cable connexion 80 are screwed together, the said cone of rubber is deformed resiliently and thereby presses the cable braiding onto the tube member. This ensures the support of the cable braiding over a large area, which is required for shielding. The tube member has a flange which is pressed firmly against the metallic counter face of the screwed cable connexion 80 when the parts of the screwed cable connexion are screwed together. Since the screwed cable connexion 80 is screwed into the metallic, bowl-shaped base part 4, a metal-metal contact occurs over a large area between the screwed cable connexion 80 and the base part 4 and acts upon the entire terminal box 1 by way of the described metal-metal contact between the base part 4 and the cover part 5.

Claims:

1. A motor terminal box for attachment to a motor housing, having a first terminal-box part and a second terminal-box part connected together with the interposition of a frame-like seal, each terminal-box part having a plug-in connexion part of a plug-in connexion, wherein the terminal-box parts abut each other in a planar manner with metallic contact faces and a metallic counter-contact face.
2. A motor terminal box as claimed in Claim 1, wherein the contact faces and/or counter-contact face are provided adjacent to the seal.
3. A motor terminal box as claimed in Claim 1 or 2, wherein the contact faces are formed by at least one attachment on the first terminal-box part situated adjacent to the seal.
4. A motor terminal as claimed in any one of Claims 1 to 3, wherein a plurality of attachments is provided in corner areas of the first terminal-box part.
5. A motor terminal box as claimed in any one of Claims 1 to 4, wherein the first terminal-box part is constructed as a base part.
6. A motor terminal box as claimed in any one of Claims 1 to 5, wherein the counter face is provided on the second terminal-box part, the second terminal-box part being constructed in the shape of a bowl.
7. A motor terminal box as claimed in Claim 6, wherein the counter face is formed by the front face of a continuous wall of the bowl-shaped second terminal-box part.
8. A motor terminal box as claimed in any one of Claims 1 to 7, wherein the seal is arranged in a shoulder of the first terminal-box part.

9. A motor terminal box as claimed in Claim 8, wherein the seal is covered towards the outside by a continuous web of the shoulder.
10. A motor terminal box as claimed in Claim 8 or 9, wherein the first terminal-box part is provided with at least one enlarged portion on the inside in the region of the shoulder.
11. A motor terminal box as claimed in Claim 10, wherein the seal is set back slightly behind the enlarged portion.
12. A motor terminal box as claimed in any one of Claims 1 to 11, wherein at least one of the terminal-box parts is provided with at least one respective retaining web for the abutment of the plug-in connexion part.
13. A motor terminal box as claimed in Claim 12, wherein the at least one terminal-box part is provided with a plurality of webs arranged on mutually opposite sides.
14. A motor terminal box as claimed in Claim 13, wherein two of the webs are situated at the same height.
15. A motor terminal box as claimed in Claim 13 or 14, wherein the plug-in connexion parts are screwed onto the webs.
16. A motor terminal box as claimed in any one of Claims 13 to 15, wherein the two terminal-box parts are each provided with a plurality of webs for the fastening and abutment of the plug-in connexion parts.
17. A motor terminal box as claimed in any one of Claims 1 to 16, wherein the second terminal-box part is provided with a through opening for a screwed cable connexion.

18. A motor terminal box substantially as herein described with reference to the accompanying drawings.